

REMARKS

Claims 1-12 were pending in the application. Claims 2-4, 11 and 12 have been amended. Claim 1 has been canceled without prejudice or disclaimer. Claim 13 has been added. No new matter has been introduced. Thus, claims 2-13 are submitted for reconsideration at this time.

In the Drawings

Figure 4 is objected to as requiring a legend such as --Prior Art-- because only that which is old is illustrated. Applicant proposes amending Figure 4 accordingly as shown in the "Proposed Changes To The Drawings" filed concurrently herewith. A new formal Figure 4 will be submitted in due course upon receiving the Examiner's approval. Withdrawal of the objection to the drawings is earnestly solicited.

In the Abstract

The Abstract is objected to for including legal phraseology. Applicant has amended the Abstract accordingly. Withdrawal of the objection to the Abstract is earnestly solicited.

Allowable Subject Matter

Applicant acknowledges with appreciation the indication of allowable subject matter in claims 2, 7, and 12. Applicant has rewritten claim 2 to be in independent form without changing the scope of claim 2. Applicant has also rewritten claims 2, 7, and 12 to address the rejections under 35 U.S.C. §112, ¶2 as set forth in greater detail below. Allowance of claims 2, 7, and 12 is earnestly solicited.

Rejections Under 35 U.S.C. §112, ¶2

Claims 2, 4-9, and 12 stand rejected under 35 U.S.C. §112, ¶2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claim 2 is considered to be indefinite for lacking proper antecedent basis for "the circuit" and "the power". Applicant has rewritten claim 2 to be in independent form and to provide proper antecedent basis for the noted terms. Withdrawal of the rejection of claim 2 under 35 U.S.C. §112, ¶2 is earnestly solicited.

Claim 4 is considered to be indefinite for lacking proper antecedent basis for "the power". Claim 4 as amended is dependent upon claim 2, which provides proper

antecedent basis for the noted term. Withdrawal of the rejection of claim 4 under 35 U.S.C. §112, ¶2 is earnestly solicited.

Claim 5 is considered to be indefinite for lacking proper antecedent basis for "the power". Claim 5 as amended is dependent upon claim 2, which provides proper antecedent basis for the noted term. Withdrawal of the rejection of claim 5 under 35 U.S.C. §112, ¶2 is earnestly solicited.

Claim 7 is considered to be indefinite for lacking proper antecedent basis for "the circuit". Claim 7 is dependent upon claim 2, which provides proper antecedent basis for the noted term. Withdrawal of the rejection under 35 U.S.C. §112, ¶2 is earnestly solicited.

Claim 12 is considered to be indefinite for lacking proper antecedent basis for "the circuit" and "the power". Applicant has amended claim 12 to provide proper antecedent basis for the noted terms. Withdrawal of the rejection of claim 12 under 35 U.S.C. §112, ¶2 is earnestly solicited.

Prior Art Rejections

Claims 1, 3, and 11 stand rejected under 35 U.S.C. §102(b) as being anticipated by Japanese reference JP 08-063022 to Hinotani ("Hinotani" hereafter). Claims 4-6 and 8-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hinotani in view of U.S. Patent No. 6,463,252 to Omoto ("Omoto" hereafter). Applicant has canceled claim 1 without prejudice or disclaimer. As amended, claims 3-6 and 8-11 are dependent upon allowable claim 2, and are considered to be allowable for at least the aforementioned reasons with respect to claim 2, in addition to the further patentable features recited therein. Allowance of claims 3-6 and 8-11 is earnestly solicited.

New Claim 13

New claim 13 has been added to more fully recite features of the present invention. Support for new claim 13 can be found, for example, in Figure 2 and throughout the specification. New claim 13 is dependent upon allowable claim 2, and is considered to be allowable for at least the aforementioned reasons with respect to claim 2, in addition to the further patentable features recited therein. Allowance of claim 13 is earnestly solicited.

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

By: D K Agarwal 52947

F-1 Pavan K. Agarwal
Attorney for Applicant
Registration No. 40,888

Date: March 3, 2003

FOLEY & LARDNER
Customer Number: 22428



22428

PATENT TRADEMARK OFFICE

Telephone: (202) 945-6162
Facsimile: (202) 672-5399

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge deposit account No. 19-0741 for any such fees; and applicant hereby petitions for any needed extension of time.

MARKED UP VERSION SHOWING CHANGES MADE

In the Abstract:

An image forming apparatus [according to the present invention includes:] is provided with a pressing roller for pressing a sheet at the time of a fixing operation; a fixing roller having a hollow portion, facing [said] the pressing roller, rising in temperature by being heated, and fixing a developer to the sheet by sandwiching the sheet between [said] the fixing roller and [said] the pressing roller; and induction heating coils including a center-section coil and an end-section coil, and arranged inside [said] the fixing roller in an axial direction so as to leave a space between the center-section coil and the end-section coil , the space being adjusted so that the temperature of one surface of [said] the fixing roller, [said] the one surface opposing the space, is not higher than the temperatures of the other surface of [said] the fixing roller, [said] the other surface opposing central portions of the coils.

In the Claims:

1. (Canceled)

2. (Amended) [The] An image forming apparatus [according to claim 1, further] comprising:

a pressing roller for pressing a sheet at the time of a fixing operation;
a fixing roller having a hollow portion, facing said pressing roller, rising in temperature by being heated, and fixing a developer to the sheet by sandwiching the sheet between said fixing roller and said pressing roller;
induction heating coils including a center-section coil and an end-section coil, and arranged inside said fixing roller in an axial direction so as to leave a space between the center-section coil and the end-section coil , the space being adjusted so that the temperature of one surface of said fixing roller, said one surface opposing the space, is not higher than the temperatures of the other surface of said fixing roller, said other surface opposing central portions of the coils; and

overheating prevention devices for monitoring an abnormally overheated condition of said fixing roller, and for breaking [the] a circuit with said fixing roller so as to turn-off [the] power applied to the two coils at the time of the occurrence of the abnormally overheated condition in which the temperature of the one surface of said fixing roller is more than a predetermined temperature, said overheating prevention devices being provided so as to oppose the center-section coil and the end-section coil, but not to oppose the space between the center- and end-section coils.

3. (Amended) The image forming apparatus according to claim [1] 2, wherein either the center-section coil and the end-section coil are simultaneously or alternately turned on and heated, or only one of them is turned on and heated.

4. (Amended) The image forming apparatus according to claim [1] 2, further comprising a heating control section for independently controlling the turn-on or turn off of the power to the center-section coil and the end-section coil.

11. (Amended) The image forming apparatus according to claim [1] 2, wherein the end-section coil comprises a first coil and a second coil, which are provided at one end and the other end of the center-section coil, respectively.

12. (Amended) An image forming apparatus comprising:
a pressing roller for pressing a sheet at the time of a fixing operation;
a fixing roller having a hollow portion, facing said pressing roller, rising in temperature by being heated, and fixing a developer to the sheet by sandwiching the sheet between said fixing roller and said pressing roller;
induction heating coils including a center-section coil and an end-section coil, and arranged inside said fixing roller in an axial direction so as to leave a space between the center-section coil and the end-section coil, the space being adjusted so that the surface temperature of one surface of said fixing roller, said one surface opposing the space, is not higher than the temperatures of the other surface of said fixing roller, said other surface opposing central portions of the coils in the case where

either of the center-section coil or the end-section coil is continuously heated and in the case where both of the center-section coil and the end-section coil are heated at a constant duty ratio, in a warming-up mode, a standby/idle mode, and a printing mode;

a first thermistor for detecting the surface temperature of the central portion of said fixing roller;

a second thermistor for detecting the surface temperature of the end portion of said fixing roller;

a heating control section for controlling turn-on or turn-off of [the] power applied to the center-section coil and the end-section coil based on outputs of the first thermistor and the second thermistor; and

overheating prevention devices for monitoring an abnormally overheated condition of said fixing roller, and for breaking [the] a circuit with said fixing roller so as to turn-off the power to the two coils at the time of the occurrence of the abnormally overheated condition in which the temperature of the one surface of said fixing roller is more than a predetermined temperature, said overheating prevention devices being provided so as to oppose central portions of the center-section coil and the end-section coil, but not to oppose the space between the center- and end-section coils.

APPENDIX

An image forming apparatus is provided with a pressing roller for pressing a sheet at the time of a fixing operation; a fixing roller having a hollow portion, facing the pressing roller, rising in temperature by being heated, and fixing a developer to the sheet by sandwiching the sheet between the fixing roller and the pressing roller; and induction heating coils including a center-section coil and an end-section coil, and arranged inside the fixing roller in an axial direction so as to leave a space between the center-section coil and the end-section coil, the space being adjusted so that the temperature of one surface of the fixing roller, the one surface opposing the space, is not higher than the temperatures of the other surface of the fixing roller, the other surface opposing central portions of the coils.